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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Frank Y. Xu et al.  
App. No.: 10/784,911 GPAU: 1713  
Filing Date: 02/23/2004 Examiner: Satya B. Sastri  
Dkt. No.: PA115-57-03 Conf. No.: 6149  
For: MATERIALS FOR IMPRINT LITHOGRAPHY

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The following information is submitted in compliance with Applicants' duty of disclosure and pursuant to 37 C.F.R. § 1.56, § 1.97 and § 1.98. The undersigned brings the patents, publications, applications or other information identified in the attached:

- ☒ Form(s) PTO/SB/08A and/or PTO/SB/08B or PTO/1449  
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to the Examiner's attention in the above-identified application. It is respectfully requested that the cited information be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

This Information Disclosure Statement is being filed:

before the mailing date of a first Office action on the merits or before the mailing date of a first Office action after the filing of a request for continued examination under § 1.114. Therefore, no fee is believed required.

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Signed: *Katrina Prati*

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Date: 11/19/04

Respectfully Submitted,



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PTO/SB/08A (08-00)

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**INFORMATION DISCLOSURE  
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of

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**Complete if Known**

Application Number	10/784,911
Filing Date	02/23/2004
First Named Inventor	Xu et al.
Group Art Unit	1713
Examiner Name	Satya B. Sastri
Attorney Docket Number	PA115-57-03

**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	B1	3,527,062		Bilinski et al.	09-08-1970	
	B2	3,783,520		King	01-08-1974	
	B3	3,807,027		Heisler	04-30-1974	
	B4	3,807,029		Troeger	04-30-1974	
	B5	3,811,665		Seelig	05-21-1974	
	B6	4,062,600		Wyse	12-13-1977	
	B7	4,070,116		Frosch et al.	01-24-1978	
	B8	4,098,001		Watson	07-04-1978	
	B9	4,119,688		Hiraoka	10-10-1978	
	B10	4,119,688		Hiraoka	10-10-1978	
	B11	4,155,169		Drake et al.	05-22-1979	
	B12	4,201,800		Alcorn et al.	05-06-1980	
	B13	4,202,107		Watson	05-13-1980	
	B14	4,267,212		Sakawaki	05-12-1981	
	B15	4,326,805		Feldman et al.	04-27-1982	
	B16	4,337,579		De Fazio	07-06-1982	
	B17	4,355,469		Nevins et al.	10-26-1982	
	B18	4,414,750		De Fazio	11-15-1983	
	B19	4,426,247		Toshiakai et al.	01-17-1984	
	B20	4,440,804		Milgram	04-03-1984	
	B21	4,451,507		Beltz et al.	05-29-1994	
	B22	4,507,331		Hiraoka	03-02-1985	
	B23	4,544,572		Sandvig et al.	10-01-1985	
	B24	4,552,832		Blume et al.	11-12-1985	
	B25	4,552,833		Ito et al.	11-12-1985	
	B26	4,600,309		Fay	07-15-1986	
	B27	4,610,442		Oku et al.	09-09-1986	
	B28	4,657,845		Frechet et al.	04-04-1987	
	B29	4,692,205		Sachdev et al.	09-08-1987	
	B30	4,694,703		Routson	09-22-1987	
	B31	4,707,218		Giammarco et al.	11-17-1987	
	B32	4,724,222		Feldman	02-09-1988	
	B33	4,731,155		Napoli et al.	03-15-1988	
	B34	4,737,425		LIN et al.	04-12-1988	
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				Examiner Name		Satya B. Sastri	
				Attorney Docket Number		PA115-57-03	
Sheet	2	of	20				

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	B35	4,763,886		Takei	08-16-1988	
	B36	4,808,511		Holmes	02-28-1989	
	B37	4,826,943		Ito et al.	05-02-1989	
	B38	4,846,931		Gmitter et al.	07-11-1989	
	B39	4,848,911		Uchida et al.	07-18-1989	
	B40	4,857,477		Kanamori	08-15-1989	
	B41	4,883,561		Gmitter et al.	11-28-1989	
	B42	4,891,303		Garza et al.	01-02-1990	
	B43	4,908,298		Hefferon et al.	03-13-1990	
	B44	4,919,748		Bredbenner et al.	04-24-1990	
	B45	4,921,778		Thackeray et al.	05-01-1990	
	B46	4,929,083		Brunner	05-29-1990	
	B47	4,931,351		McColgin et al.	06-05-1990	
	B48	4,959,252		Bonnebat et al.	09-25-1990	
	B49	4,964,945		Calhoun	10-23-1990	
	B50	4,976,818		Hashimoto et al.	12-11-1990	
	B51	4,980,316		Huebner	12-25-1990	
	B52	4,999,280		Hiraoka	03-12-1990	
	B53	5,053,318		Gulla et al.	10-01-1991	
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	B55	5,071,694		Uekita et al.	12-10-1991	
	B56	5,072,126		Progler	12-10-1991	
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	B65	5,169,494		Hashimoto et al.	12-08-1992	
	B66	5,173,393		Sezi et al.	12-22-1992	
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	B68	5,198,326		Hashimoto et al.	03-30-1993	
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	B69	5,204,739		Domenicali	04-20-1993	
	B70	5,206,983		Guckel et al.	05-04-1993	
	B71	5,212,147		Sheats	05-18-1993	
	B72	5,234,793		Sebald et al.	08-10-1993	
	B73	5,240,550		Boehnke et al.	08-31-1993	
	B74	5,240,878		Fizsimmons et al.	08-31-1993	
	B75	5,242,711		DeNatale et al.	09-07-1993	
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	B79	5,277,749		Griffith et al.	01-11-1994	
	B80	5,314,772		Kozicki et al.	05-24-1994	
	B81	5,318,870		Hartney	06-07-1994	
	B82	5,324,683		Fitch et al.	06-28-1994	
	B83	5,328,810		Lowrey et al.	07-12-1994	
	B84	5,330,881		Sidman et al.	07-19-1994	
	B85	5,348,616		Hartman et al.	09-20-1994	
	B86	5,362,606		Hartney et al.	11-08-1994	
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	B88	5,374,454		Bickford et al.	12-20-1994	
	B89	5,376,810		Hoenk et al.	12-27-1994	
	B90	5,380,474		Rye et al.	01-10-1995	
	B91	5,392,123		Marcus et al.	02-21-1995	
	B92	5,417,802		Obeng	05-23-1995	
	B93	5,421,981		Leader et al.	06-06-1995	
	B94	5,422,295		Choi et al.	06-06-1995	
	B95	5,424,549		Feldman	06-13-1995	
	B96	5,425,848		Haisma et al.	06-20-1995	
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	B99	5,439,766		Day et al.	08-08-1995	
	B100	5,452,090		Progler et al.	09-19-1995	
	B101	5,453,157		Jeng	09-26-1995	
	B102	5,458,520		DeMercurio et al.	10-17-1995	
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Sheet	4	of	20	Attorney Docket Number	PA115-57-03

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		Number	Kind Code <sup>2</sup> (if known)			
	B103	5,468,542		Crouch	11-21-1995	
	B104	5,480,047		Tanigawa et al.	01-02-1996	
	B105	5,512,131		Kumar et al.	04-30-1996	
	B106	5,515,167		Ledger et al.	05-07-1996	
	B107	5,523,878		Wallace et al.	06-04-1996	
	B108	5,527,662		Hashimoto et al.	06-18-1996	
	B109	5,545,367		Bae et al.	08-13-1996	
	B110	5,566,584		Briganti	10-22-1996	
	B111	5,633,505		Chung et al.	05-27-1997	
	B112	5,654,238		Cronin et al.	08-05-1997	
	B113	5,669,303		Maracas et al.	09-23-1997	
	B114	5,670,415		Rust	09-23-1997	
	B115	5,700,626		Lee et al.	12-23-1997	
	B116	5,723,176		Keyworth et al.	03-03-1998	
	B117	5,724,145		Kondo et al.	03-03-1998	
	B118	5,725,788		Maracas et al.	03-10-1998	
	B119	5,736,424		Prybyla et al.	04-07-1998	
	B120	5,743,998		Park	04-28-1998	
	B121	5,747,102		Smith et al.	05-05-1998	
	B122	5,753,014		Van Rijn	05-19-1998	
	B123	5,760,500		Kondo et al.	06-02-1998	
	B124	5,772,905	A	Chou	06-30-1998	
	B125	5,776,748		Singhvi et al.	07-07-1998	
	B126	5,779,799		Davis	07-14-1998	
	B127	5,802,914		Fassler et al.	09-08-1998	
	B128	5,855,686		Rust	01-05-1999	
	B129	5,877,036		Kawai	03-02-1999	
	B130	5,877,861		Ausschnitt et al.	03-02-1999	
	B131	5,888,650		Calhoun et al.	03-30-1999	
	B132	5,895,263		Carter et al.	04-20-1999	
	B133	5,900,160		Whitesides et al.	05-04-1999	
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	B135	5,912,049		Shirley	06-15-1999	
	B136	5,926,690		Toprac et al.	07-20-1999	
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	B137	5,937,758		Maracas et al.	08-17-1999	
	B138	5,942,871		Lee	08-24-1999	
	B139	5,948,219		Rohner	09-07-1999	
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	B143	6,033,977		Gutsche et al.	03-07-2000	
	B144	6,035,805		Rust	03-14-2000	
	B145	6,038,280		Rossiger et al.	03-14-2000	
	B146	6,039,897		Lockhead et al.	03-21-2000	
	B147	6,046,056		Parce et al.	04-04-2000	
	B148	6,051,345		Huang	04-18-2000	
	B149	6,074,827		Nelson et al.	06-13-2000	
	B150	6,091,485		Li et al.	07-18-2000	
	B151	6,096,655		Lee et al.	08-01-2000	
	B152	6,117,708		Wensel	09-12-2000	
	B153	6,125,183		Jiawook et al.	09-26-2000	
	B154	6,128,085		Buermann et al.	10-03-2000	
	B155	6,143,412		Schueller et al.	11-07-2000	
	B156	6,150,231		Muller et al.	11-21-2000	
	B157	6,150,680		Eastman et al.	11-21-2000	
	B158	6,168,845		Fontana Jr. et al.	01-02-2001	
	B159	6,180,239	B1	Whitesides et al.	01-30-2001	
	B160	6,188,150	B1	Spence	02-13-2001	
	B161	6,204,922	B1	Chalmers	03-20-2001	
	B162	6,218,316	B1	Marsh	04-17-2001	
	B163	6,245,581	B1	Bonser et al.	06-12-2001	
	B164	6,274,294	B1	Hines	08-14-2001	
	B165	6,309,580	B1	Chou	10-30-2001	
	B166	6,326,627	B1	Putvinski et al.	12-04-2001	
	B167	6,329,256	B1	Ibok	12-11-2001	
	B168	6,334,960	B1	Willson et al.	01-01-2002	
	B169	6,355,198	B1	Kim et al.	03-12-2002	
	B170	6,387,783		Furukawa et al.	05-14-2002	
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<b>Sheet</b>	6	of	20		

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Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
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		Application Number	10/784,911		
		Filing Date	02/23/2004		
		First Named Inventor	Xu et al.		
		Group Art Unit	1713		
		Examiner Name	Satya B. Sastri		
		Attorney Docket Number	PA115-57-03		
Sheet	7	of	20		

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20

## Application Number

**Filing Date****First Named Inventor**

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Application Number

10/784.911

**Filing Date**

02/23/2004

**First Named Inventor**

Xu et al.

### Group Art Unit

1713

Examiner Name

**Satya B. Sastri**

Attorney Docket Number

PA115-57-03

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				<b>Filing Date</b>	02-23-2004
				<b>First Named Inventor</b>	Xu et al.
				<b>Group Art Unit</b>	1713
				<b>Examiner Name</b>	Satya B. Sastri
<b>Sheet</b>	10	of	20	<b>Attorney Docket Number</b>	PA115-57-03

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				Filing Date	02/23/2004
				First Named Inventor	Xu et al.
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				Examiner Name	Satya B. Sastri
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				Application Number	10/784,911
				Filing Date	02/23/2004
				First Named Inventor	Xu et al.
				Group Art Unit	1713
				Examiner Name	Satya B. Sastri
Sheet	12	of	20	Attorney Docket Number	PA115-57-03

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				<b>Group Art Unit</b>	1713
				<b>Examiner Name</b>	Satya B. Sastri
<b>Sheet</b>	13	<b>of</b>	20	<b>Attorney Docket Number</b>	PA115-57-03

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Sheet	14	of	20	Attorney Docket Number	PA115-57-03

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.	B315	KOSEKI, "Design and Accuracy Evaluation of High-Speed and High Precision Parallel Mechanism.", Proc. Of IEEE, January 1, 1998, Intl. Conf. on Robotics & Automation, pp. 1340-1345.	
✓	B316	KOTACHI et al., "Si-Containing Positive Resist for ArF Excimer Laser Lithography.", Photopolymer Science and Technology, November 4, 1995, pp. 615 - 622.	
	B317	KRAUSS et al., "Fabrication of Nanodevices Using Sub-25 nm Imprint Lithography.", Appl. Phy. Lett., January 1, 1995, 67 (21), pp. 3114-3116.	
	B318	KRUG et al., "Fine Patterning of Thin Sol-gel Films.", Journal of Non-Crystalline Solids, January 1, 1992, 147 & 148, pp. 447-450.	
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.	B320	LEE et al., "Ultra Precision Positioning System for Servo Motor-piezo Actuator Using the Dual Servo Loop and Digital filter Implementation.", American Society for Precision Engineering, January 1, 1998, pp. 287-290.	
✓	B321	LIN, "Multi-Layer Resist Systems.", Introduction to Microlithography, February 14, 1983, pp. 287-349.	
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✓	B323	MANSKY et al., "Large-Area Domain Alignment in Block Copolymer Thin Films Using Electric Fields.", Macromolecules, June 9, 1998, Vol. 31, No. 13, pp. 4399-4401.	
?	B324	MCMACKIN et al., "A Method of Creating a Turbulent Flow of Fluid between a Mold and a Substrate," U.S. Patent Application 10/898,034, Filed with USPTO July 23, 2004.	
?	B325	MCMACKIN et al., "A System of Creating a Turbulent Flow of Fluid between a Mold and a Substrate," U.S. Patent Application 10/898,037, Filed with USPTO July 23, 2004.	

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				<b>Application Number</b>	10/784,911
				<b>Filing Date</b>	02/23/2004
				<b>First Named Inventor</b>	Xu et al.
				<b>Group Art Unit</b>	1713
				<b>Examiner Name</b>	Satya B. Sastri
<b>Sheet</b>	15	<b>of</b>	20	<b>Attorney Docket Number</b>	PA115-57-03

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9	B326	MCMACKIN et al., "Single Phase Fluid Imprint Lithography Method," U.S. Patent Application 10/677,639, Filed with USPTO Oct. 16, 2003.	
-	B327	MERLET, "Parallel Manipulators: State of the Art and Perspectives.", Advanced Robotics, January 1, 1994, Vol. 8, pp. 589-596.	
/	B328	MIRKIN et al., "Emerging Methods for Micro-and-Nanofabrication.", MRS Bulletin, July 1, 2001, pp. 506-509.	
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.	B330	NERAC.COM Retro Search, "Multi-Layer Resists.", September 2, 2004.	
/	B331	NERAC.COM Retro Search, "Reduction of Dimension of Contact Holes.", August 31, 2004.	
.	B332	NERAC.COM Retro Search, "Trim Etching of Features Formed on an Organic Layer.", September 2, 2004.	
-	B333	NGUYEN, "Asymmetric Fluid-Structure Dynamics in Nanoscale Imprint Lithography." The University of Texas at Austin, August 1, 2001, pp. 1-111.	
2	B334	OHYA et al., "Development of 3-DOF Finger Module for Micro Manipulation.", Proc. of IEEE, March 1, 1999, Intl. Conf. on Intelligent Robots and Systems, pp. 894-899.	
✓	B335	OTTO et al., "Step and Repeat UV-Nanoimprint Lithography: Material Issues.", NNT02 San Francisco, December 11, 2002.	
.	B336	PAPIRER et al., "Abstract of The Grafting of Perfluorinated Silanes onto the Surface of Silica: Characterization by Inverse Gas Chromatography.", Journal of Colloid and Interface Science 159, August 1, 1993, pp. 238-242.	

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	B337	PARIKH et al., "An Intrinsic Relationship between Molecular Structure in Self-Assembled n-Alkylsiloxane Monolayers and Deposition Temperature.", Journal of Phys. Chem., July 1, 1994, pp. 7577-7590.	
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	B343	RAIBERT et al., "Hybrid Position/Force Control of Manipulators.", Journal of Dynamic Systems, Measurement, and Control, June 1, 1981, Vol. 102, pp. 126 - 133.	
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	B347	RUCHHOEFT et al., "Patterning Curved Surfaces: Template Generation by Ion Beam Proximity Lithography and Relief Transfer by Step and Flash Imprint Lithography.", Journal of Vacuum Science and Technology, pp. 1-17.	

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				<b>Examiner Name</b>	Satya B. Sastri
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	B348	SAGIV, "Organized Monolayers by Absorption. 1. Formation and Structure of Oleophobic Mixed Monolayers on Solid Surfaces.", Journal of American Chemical Society/102:1, January 2, 1980.	
	B349	SCHEER et al., "Problems of the Nanoimprinting Technique for Nanometer Scale Pattern Definition.", J. Vac. Sci. Techno. B., November 1, 1998, pp. 3917-3921.	
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	B351	SOWAH, Diamond Used to Break the Mould [online], Sept, 18, 2002, [Retrieved on Sept. 2, 2003.] Retrieved from the Internet: <URL: http://eetuk.com/showArticle.jhtml?articleID=19203691>.	
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	B358	TAJBAKSHI et al., "Three-Degree-of-Freedom Optic Mount for Extreme Ultraviolet.", American Society for Precision Engineering, January 1, 1998, pp. 359-362.	

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✓	B359	TANIKAWA et al., "Development of Small-sized 3 DOF Finger Module in Micro Hand for Micro Manipulation.", Proc. of IEEE, March 1, 1999, Intl. conf. on Intelligent Robots and Systems, pp. 876-881.	
✓	B360	TOMITA et al., "A 6-axes Motion Control Method for Parallel-Linkage-Type Fine Motion Stage.", JSPE-58-04, pp. 118-124.	
✓	B361	Translation of Japanese Patent 02-24848, January 26, 1990.	
✓	B362	Translation of Japanese Patent 02-92603, April 3, 1990.	
✓	B363	TRILOGY SYSTEMS, "Linear Motors 310.", www.trilogysystems.com, January 1, 2001.	
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?	B370	US Applications No. 10/194,991, Filed 07-11-2002, SREENIVASAN et al., "Step and Repeat Lithography Processes."	
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	B372	VANDERBILT UNIVERSITY OFFICE OF TRANSFER TECHNOLOGY; VU9730 Specifications for Improved Flexure Device; 2001, 25, 192-199.	
	B373	WANG et al., "Passive Compliance versus Active Compliance in Robot-Based Automated Assembly Systems.", Industrial Robot, January 1, 1998, Vol. 25, No. 1, pp. 48-57.	
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?	B375	WILLSON et al., "Step and Flash Imprint Lithography", U.S. Patent Application 10/806,051, Filed with USPTO March 22, 2004.	
✓	B376	WU, "Large Area High Density Quantized Magnetic Disks Fabricated Using Nanoimprint Lithography.", J. Vac. Sci. Technol., November 1, 1998, B 16(6), pp. 3825-3829.	
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?	B379	XU et al., "Materials for Imprint Lithography," U.S. Patent Application 10/784,911, Filed with USPTO Feb. 23, 2004.	
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/	B381	Chou, Ultrafast and Direct Imprint of Nanostructures in Silicon, Nature, Col. 417, (June 2002), pp. 835-837.	

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